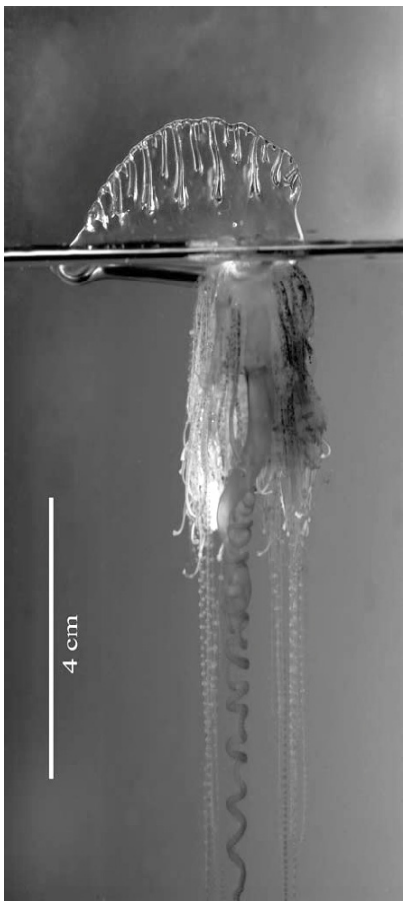
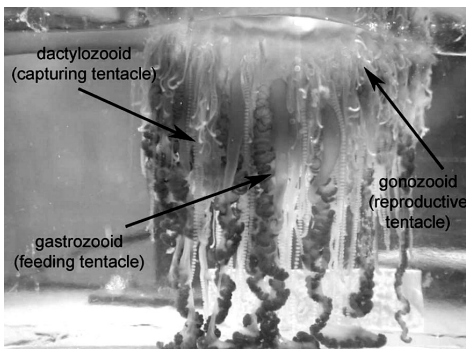
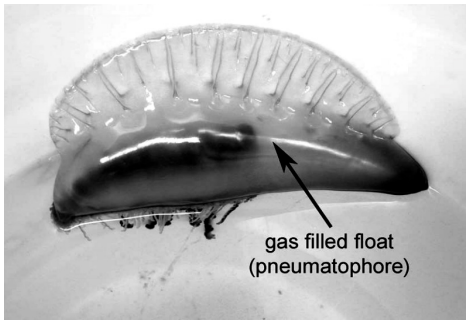
The Portuguese man-of-war (Physalia physalis)
Classification:
Kingdom Animalia
Phylum Cnidaria
Class Hydrozoa
Order Siphonophora
Suborder: Rhizophysaliae
Family: Physaliidae
Genus: Physalia
Species: Physalia physalis



The Portuguese man-of-war is often mistaken for a jellyfish. However, this animal is not a single animal but a floating hydrozoan colony - a colony of numerous organisms called polyps (or zooids) that are so specialized that they cannot live without each other.

Four main types of polyps make up the man-of-war. One individual polyp becomes the large gas filled float (pneumatophore) that sits horizontally on the surface of the ocean. The float can be up to 15 cm above the water and is generally translucent, tinged with pink, purple or blue. The other polyps become the feeding tentacles (gastrozooids), the defensive/prey capturing tentacles (dactylozooids) and the reproductive polyps (gonozooids). The tentacles of the man-of-war can hang down in the water 165 feet (or 50 meters). The fossil records for this species go back 600 million years (Parks 2000).





Habitat

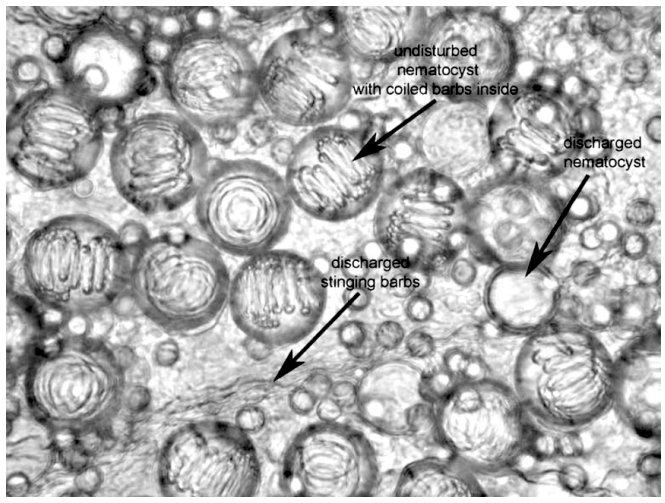
The Portuguese man-of-war is a pelagic marine animal, blown about by the winds and pushed around by the currents (Sterrer 1992). They also fall under the classification of macro-holoplankton. The pneumatophore stays at the surface of the ocean, dipping into the water only to keep from drying out (Sterrer 1992). The transparent blue and purple coloration camouflages the animal against the backdrop of ocean waves. Although they are most common in the open ocean, waves may direct them into shallow waters or wash them up on beaches. The float of each individual is either right or left-sided, which causes the man-of-war to drift 45 degrees to the right or left of the wind direction (Kurlansky 2004). This adaptation allows the species to populate oceans throughout the world (Kurlansky 2004). Also, if one half of the population floats into predators or a current that washes them up on shore, the other half can survive. Sometimes they end up floating into groups of thousands of organisms (Lee 2003).

Men-of-war are most often found in warm, tropical and subtropical waters of the world's oceans (Kurlanksky 2004 & Kirkpatrick & Pugh 1984). However, there have been hundreds of reports of them washing up on beaches in England, Wales, and Ireland (Kirkpatrick & Pugh 1984). In general, they can be found in the Atlantic Ocean, Pacific Ocean, Indian Ocean, and the Caribbean (Kurlansky 2004). They are especially common in the Sargasso Sea (Kurlansky 2004).

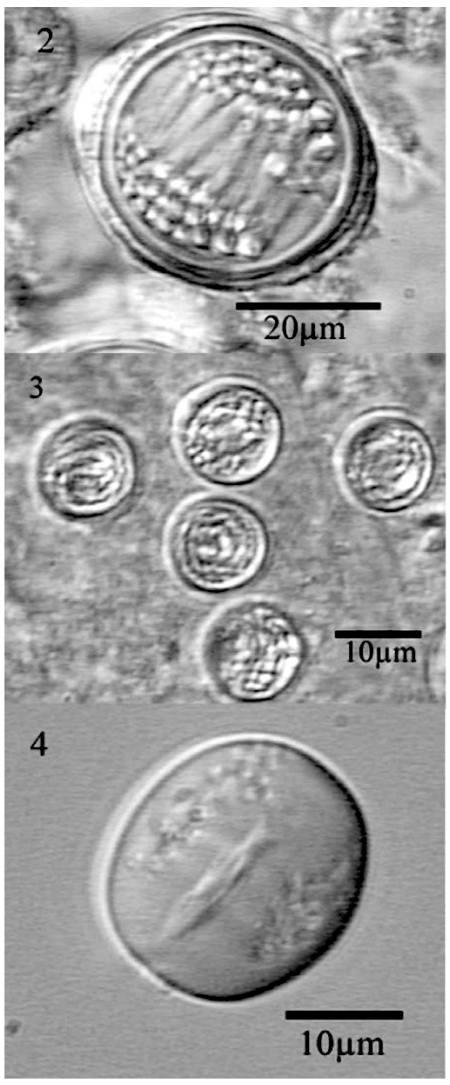
Ecology: Bahaviour and Food Habits

Portuguese men-of-war feed on a wide variety of prey, including fish, fish larvae, cephalopods, chaetognaths, and leptocephalus (eel) larvae (Purcell 1989). All of this prey has the common theme of being soft-bodied. The structure of man-of-war nematocysts may prevent the capture of hard-bodied prey (Purcell 1989). In a study conducted by Purcell (1989), the stomach contents of men-of-war were found to be 70-90% larval fish. Each man-of-war consumed about 120 fish larva daily. Of the larvae ingested, 60% was available in the water column at 0 to 5 m depth.

Men-of-war do not have the elements of speed or surprise to attack prey, since their movements are greatly restricted by winds and waves. They must rely on other adaptations to survive. While hunting, they stretch out the stinging tentacles to full length to act as a floating net (Johnsen 2000). Although they are mostly transparent, their tentacles have pigmented regions that resemble larval fish, copepods, and small shrimp to lure prey into their stinging net (Johnsen 2000 & 2001). In the absence of jaws or brute strength, the tentacles serve to stun and entangle prey. Once prey is trapped, men-of-war can contract their tentacles to bring the prey into contact with polyps that secrete digestive enzymes to liquefy their catch (Lee 2003).



After the food has been digested, any undigestible remains are pushed out through the mouths. The nourishment from the digested food is absorbed into the body and eventually circulates to the different polyps in the colony. The tentacles, or dactylozooids, are the Man-of-War's main mechanisms for catching its prey and are also used for defense.



Figs. 2-4. Nematocysts of *Physalia physalis* (Linnaeus, 1758): 2, big isorhiza; 3, small isorhiza; 4, stenotele.

As the colony drifts, the man-of-war is constantly 'fishing' for food with its tentacles. The food is trapped in the tentacles (dactylozooids) with the aid of specialized stinging capsules called nematocysts that cover much of the surface area. Nematocysts are tightly packed with tiny, coiled, stinging barbs that shoot out whenever the cells are disturbed (either by something brushing up against them, or by osmotic water changes).

Reproduction

An "individual" is actually a colony of unisexual organisms. Every individual has specific gonozooids (sex organs or reproductive parts of the animals, either male or female). Each gonozooid is comprised of gonophores, which are little more than sacs containing either ovaries or testes.

Physalia are dioecious. Their larvae probably develop very rapidly to small floating forms.

Fertilization of P. physalis is assumed to occur in the open water, because gametes from the gonozooids are shed into the water. This may happen as gonozooids themselves are broken off and released from the colony. The release of gonozooids may be a chemical response occurring when groups of individuals are present in one locality. Critical density is probably required for successful fertilization. Fertilization may take place close to the surface. Most reproduction takes place in the fall, producing the great abundance of young seen during the winter and spring. It is not known what triggers this spawning cycle but it probably begins in the Atlantic Ocean.

Glossary

- Cormidium: (plural: cormidia) Cluster of zooids.
- Nematocyst: A capsule within specialized cells in the tentacles of cnidarians, such as jellyfish and corals, containing a barbed, threadlike tube that delivers a toxic sting to predators and prey.
- Pneumatophore: A float with a sail-like crest and an inner air-sac.
- Zooid: The units that make up a colonial animal. Each zooid is structurally similar to a free living animal.

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